Information Handling Systems Analyst
Proposed Grade---GS-14

A. Position Identity

Information Handling Systems Analyst (IHSA) DDA, Position 0000. The IHS Analyst reports to the IHSA (Information Handling Systems Architect) and is the lead specialist for analysis of IHSs in the office. He is knowledgeable and experienced with respect to a broad range of analytic tools which can be applied to the analysis of systems and programs for both evaluation and design purposes.

B. Major Duties

1. Responsible for analysis of IHS networks. He will use a variety of techniques, such as Monte Carlo type event simulation, and analytic formulations, to describe the performance of alternative architectures.

Subjects of analysis will be proposed projects and programs relevant to the strategic planning process of the office. He will develop tradeoff curves of performance versus key parameters, to support decisions with respect to the network architecture and required investments in nodal equipments.

2. Responsible for analysis of performance of new processor/software systems. He will apply queuing theory techniques in evaluating the throughput capability of such new processor/software configurations as whole text processing systems, relational databases with Agency-characteristic schemas, and secure operating systems with various database systems.

3. Responsible for resource allocation type analyses. In the performance of these analyses, he shall apply a variety of analytic techniques, including linear programming and PERT with load-leveling. He may also be required to execute Delphic-type approaches with scoring and weighting to translate reviewers' judgements into final relative merits of competing architectural configurations.

4. Responsible for technology projection analyses using historical data. He will apply various types of performance growth functions in a regression analysis environment to project future performance. In performing such analyses, he will work under the guidance of the technology specialist who has cognizance of the technology involved, to assure that the appropriate functions are being applied and that the results are physically realistic. He will use his expertise to select and apply regression functions appropriate to the technology.

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5. He will develop application software to implement his analyses, using higher order languages, such as FORTRAN, APL, GASP, or LISP. In developing his packages, he will use structured design and adhere to the general precepts of structured programming. His packages will each be approximately documented in terms of design, implementation, and operation.

6. He will provide expertise to the IHSA concerning the relative merit of various higher order languages in relation to specific system requirements. He will review software packages for adherence to appropriate standards and practices, as may be requested by the IHSA.

7. He will monitor and guide analytic efforts relative to the architectural concerns of the IHSA as may be performed by other Agency components or contractors. In some instances, he may serve as COTR for contractor efforts.

C. Evaluation Factors

1. Knowledge Required by the Position

The Information Handling Systems Analyst must be an analyst skilled in the array of analytic techniques relevant to IHSs. Specifically, included are simulation and analytic modeling and statistical analysis techniques.

In terms of simulation analysis, he must be able to define the proper random event distributions to be used at the various nodal points in a model based on a proper assessment of statistically defined input data. He must then be able to determine the number of replications required to achieve his predefined accuracy objectives. Alternatively, he must be able to estimate the accuracy of the result for a given number of trials. He must be sensitive to the various special problems that can arise in terms of the results in complex, nonlinear systems.

In terms of analytic techniques, he must be able to formulate linear systems problems in terms of stochastic differential or integral equations. In this context, he must know queuing theory and be able to apply it to calculate processing throughput capabilities for various processing system configurations. He must also be able to apply it to calculate communications network and bus throughput, under various line disciplines and protocols.

His statistical analysis skills must include a general familiarity with at least one of the several statistical

analysis packages available in the Community, such as the SPSS, IMSL, or BMD. He should also be able to write statistical analysis programs as necessary in order to be able to apply special functions or incorporate special solution seeking techniques.

He must also have experience and knowledge with respect to higher order languages. He will be expected to expand that knowledge within his position to develop a good understanding of the characteristics of all the higher order languages in use within the Agency and proposed for such use. In order to do so, he must have an understanding of such language elements as, instructions sets, syntax, data structures, and variable declarations.

2. Supervisory Controls

The Information Handling Systems Analyst will report to and receive his instructions from the IHSA. He will operate in a collegial environment as the senior Analyst. As such, he will work closely with the other professional specialists on the staff. He will, on occasion, take guidance from these staff members, particularly the Deputy IHSA.

His work will be reviewd by the IHSA for conformity with guidance, proper selection of analytic tools, and adherence to general policies.

3. Guidelines

The Information Handling Systems Analyst will operate primarily on the basis of oral guidance. For efforts of significant scope, he will typically be asked to prepare a statement of work for his intended analytic effort. Such statements will have to be closely coordinated with the other staff members with respect to technological factors. The formulation of his larger analytic effort will require the use of excellent judgement to select the appropriate analytic technique for dealing with the problem at hand. Furthermore, the analytic formulation must be specifically targeted on the questions to be answered. In other words, the analyst must be able to select the analytic technique on the basis of the problem characteristics, not force fit analytic procedures with which he may be comfortable, to the problem at hand.

4. Complexity

The Information Handling Systems Analyst begins his analytic efforts by structuring the problem. In the top-level management environment in which he will operate, he will

usually be dealing with unstructured problems, so he must be skillful and insightful in this environment. A key aspect of the structuring of the problem is the formulation of the questions to be answered.

Pursuant to the structuring of the problem, the Analyst must break it up into integral analytic units. These units must then be developed into a time phased work plan, accomplishable within the allowed time.

The Analyst must then develop the analytic formulations for each work unit and implement those functionalities. Because there will usually be stringent time and scope constraints, there is a premium on the Analyst being able to use powerful analytic techniques wherever possible, in preference to simulation techniques. This requires mastery of advanced and sophisticated analytic techniques, including those involving stochastic processes.

5. Scope and Effect

The analyses performed provide key input data for the determinations of the optimum information handling system architectures for the Agency. The scope is broad. Involved are communications, processing, and storage and printing services to all the operating units of the Agency. Affected are the annual investment of over [redacted] of the Agency's resources.

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The objectives of these analytic efforts are to provide: the most cost-effective service consistent with security and robustness constraints; timely provision of new functionalities needed by operating organizations; and an interoperating whole made up of large number independent functionalities.

6. Personal Contacts

The position of IHS Analyst requires broad contact with experts and senior managers throughout the Agency, and sometimes in the Community. The contacts will involve discussions of requirements, approaches, and long-range implication of alternatives and coordination of activities. Matters of discussion will frequently be controversial. The incumbent must exercise tact and be persuasive.

Internally, the IHS Analyst will closely interface with the other staff members, translating functionalities in various technological areas into analytic descriptions of performance. He must work smoothly and cooperatively with these

professionals to provide integrated analytic evaluations. He must have the self-confidence to seek and incorporate into his analyses and planning the best technical advice and analyses available.

7. Purpose of Contacts

The purposes of his contacts are to develop accurate models of IHS architectures, as described in the previous paragraphs.

8. Physical Demands

The work is mostly sedentary. Some local and distance travel is required for technical discussions.

9. Work Environment

The IHS Analyst works in an office environment. He will extensively use a visual display terminal.